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"Monitoring and Detecting Environmentally Induced Cracking" *(Overview),* S.M. Bruemmer, December, 16–17.
"Monitoring and Modeling Stress Corrosion and Corrosion Fatigue Damage in Nuclear Reactors" *(Featured Overview),* P.L. Andresen, F.P. Ford, H.D. Solomon and D.F. Taylor, December, pp. 7–11.
"The Oxidation Behavior and Protection of Niobium" *(Overview),* R.A. Perkins and G.H. Meier, August, pp. 17–21.
"Radiation Effects in Magnetic and Superconducting Materials" *(Research Summary),* R.D. Brown and J.R. Cost, February, pp. 39–43.
"Using Acoustic Emission to Monitor Stress-Corrosion Cracking" *(Research Summary),* R.H. Jones and M.A. Friesel, December, pp. 12–15.

Economics

"Aerospace Propulsion System Materials in the Next 25 Years—Composites Take Off" *(Economics),* R.W. Bryant, December, pp. 27–28.
"Bureau of Mines Considers the Status of Advanced Materials" *(Conference Review),* C.A. Sorrell and L.J. Sousa, June, pp. 30–31.
"Bureau of Mines Surveys Mineral and Metal Commodities" *(1990 Review of Extractive Metallurgy),* M.C.

Munson, April, pp. 49–51.
"Checking the Status of Plastic Materials for Auto Body Panels" *(Economics)*, M. O'Malley, January, pp. 17–19.
"Considering the Status of the Lead and Zinc Communities" *(Economics)*, J.-P. Rodier, June, pp. 36–38.
"The Current Status of Scrap Metal Recycling" *(1990 Review of Extractive Metallurgy)*, H. Spoel, April, pp. 38–41.
"The Growing Supply and Demand for Recycled Steel Cans" *(Overview)*, E. Olenbush, October, pp. 30–31.
"How the Middle East Crisis May Affect the Aluminum Industry" *(Economics)*, R.G. Adams, November, p. 45.
"Laser Surface Modification of Zinc-Base Composites" *(Applied Technology)*, N.B. Dahotre, T.D. McCay and M.H. McCay, June, pp. 44–47.
"Litter and Landfills—The Challenges and Opportunities for Degradable Plastics" *(Economics)*, J.R. Olechowski, October, pp. 28–29.
See also: *"Global Perspective" and "News & Update."*

Education

"Educators' Workshops on Standard Experiments in MSE" *(Education)*, J.A. Jacobs, June, p. 29.
"Materials Courses for Student Engineers in the 1990s" *(Education)*, L.H. Van Vlack, January, pp. 6–8.
"NAE Targets Education and Employment of Engineers for the 1990s" *(The Reporter)*, M.C. Munson, February, pp. 28–29.
"Preparing Materials Engineering Students for Design" *(Education)*, D.A. Woodford, August, pp. 36–37.
See also: *"Campus Notebook."*

Electronic Materials

"Electromigration Failure of Circuit-Level Interconnections" *(Overview)*, J.E. Sanchez, Jr., J.W. Morris, Jr. and J.R. Lloyd, September, pp. 41–45.
"Emerging Technologies and Applications for Polymers" *(Featured Overview)*, N.P. Cheremisinoff, January, pp. 10–16.
"Investigating the Integrity and Reliability of Electronic Packaging and Interconnection Materials," B. Sandor and T. Kilinski, September, p. 55.
"Materials and Mechanics Issues of Solder Alloy Applications" *(Conference Review)*, K. Kinsman, D.R. Frear and W.B. Jones, September, pp. 34–36.
"Materials Issues for Advanced Electronic and Optoelectronic Connectors" *(Conference Review)*, J. Crane and S. Wen, September, pp. 37–39.
See also: *"Magnetic Materials" and "Superconducting Materials."*

Environment

"The Current Status of Scrap Metal Recycling" *(1990 Review of Extractive Metallurgy)*, H. Spoel, April, pp. 38–41.
"Electric Arc Furnace Dust Treatment" *(Forum Feature)*, N.L. Kotraba, March, pp. 58–59.
"Fungal Biosorption of Heavy Metal Ions from Aqueous Solutions" *(Forum Feature)*, H.M. Saxton and D.G. Jones, January, p. 47.
"Highlights from the Annual Conference of Metallurgists" *(Conference Review)*, D. Poggi, P. Hancock, M. Reist and L. St. Arnaud, June, p. 32.
"The Problem of Sulfur Content in Calcined Petroleum Coke" *(Overview)*, M.F. Vogt, J.H. Waller and R.D. Zabreznik, July, pp. 33–35.
"Recovering Zn, Pb, Cd and Fe from Electric Furnace Dust" *(1990 Review of Extractive Metallurgy)*, J.C. Wang, M.T. Hepworth and K.J. Reid, April, pp. 42–45.
"Regulations and Practices for the Disposal of Spent Potliner by the Aluminum Industry" *(Forum Environment)*, S.J. Spiegel and T.K. Pelis, November, pp. 70–73.
See also: *"Recycling & Secondary Recovery."*

Ferrous Metallurgy

"Al-Li Alloys and Ultrahigh-Strength Steels for U.S. Navy Aircraft" *(Featured Overview)*, E.W. Lee, C.E. Neu and J. Kozol, May, pp. 11–14.
"Analyzing Thermal Creep Strain of a Tokamak First-Wall Steel" *(Overview)*, G. Lewis and C.-C. Chuang, December, pp. 22–23.
"The Growing Supply and Demand for Recycled Steel Cans" *(Overview)*, E. Olenbush, October, pp. 30–31.
"Is the U.S. Vulnerable to Low-Cost Ferrosilicon Producers?" *(Global Perspective)*, P.C. Thomas, February, p. 14.
"Recovering Zn, Pb, Cd and Fe from Electric Furnace Dust" *(1990 Review of Extractive Metallurgy)*, J.C. Wang, M.T. Hepworth and K.J. Reid, April, pp. 42–45.
"Ultrahigh-Strength Steels for Aerospace Applications" *(Overview)*, W.M. Garrison, Jr., May, pp. 20–24.

Global Perspective

"Is the U.S. Vulnerable to Low-Cost Ferrosilicon Producers?" P.C. Thomas, February, p. 14.
"Recyclability Hinders Plastic Containers in the 1990s," P.J. Mooney, January, p. 9.
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"The Steel Can Recycling Institute," K. Smalberg, October, p. 8.

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"Aluminum Nitride Refractories for Handling High-Nickel Alloys" *(Forum Feature)*, P.T.B. Shaffer and R.R. Donn, March, p. 59.
"Characterizing Solute-Lean Defects in Superalloys" *(Overview)*, E. Samuelsson, J.A. Domingue and G.E. Maurer, August, pp. 27–30.
"The Design and Fabrication of Nickel-Base Superalloys" *(Tutorial)*, S. Ahmed, August, pp. 24–26.
"Development of a Simulated Bird-Strike Test Method" *(Research Summary)*, G.N. Colvin and J.R. Falls, May, pp. 26–29.
"Metallurgical Control of Fatigue Crack Propagation in Superalloys" *(Overview)*, K.-M. Chang, M.F. Henry and M.G. Benz, December, pp. 29–35.
"The Oxidation Behavior and Protection of Niobium" *(Overview)*, R.A. Perkins and G.H. Meier, August, pp. 17–21.
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See also: *"Intermetallics" and "Refractory Materials."*

Hydrometallurgy

"Applying the Redox Process to Arsenical Concentrates" *(Research Summary)*, M.J.V. Beattie and A. Ismay, January, pp. 31–35.
"The Aqueous Processing of Minerals and Materials" *(1990 Review of Extractive Metallurgy)*, F.M. Doyle, April, pp. 52–59.
"Biotechnology for the Extractive Metals Industries" *(Overview)*, J.A. Brierley, January, pp. 28–30.
"A Challenge for the 1990s: The Hydrometallurgical Treatment of Wastes and Residues" *(Commentary)*, D. Dreisinger, January, p. 27.
"Converting Jarosite Residues into Compact Hematite Products" *(Research Summary)*, J.E. Dutrizac, January, pp. 36–39.
"Fungal Biosorption of Heavy Metal Ions from Aqueous Solutions" *(Forum Feature)*, H.M. Saxton and D.G. Jones, January, p. 47.
"Metallurgical Processes for the Year 2000 and Beyond" *(Conference Review)*, H.Y. Sohn and E.S. Geskin, April, pp. 32–34.
"The Recovery of Gold from Refractory Ores by the Use of Carbon-in-Chlorine Leaching" *(Research Summary)*, J.N. Greaves, G.R. Palmer and W.W. White III, September, pp. 12–14.
"Reflecting on the New Goals in Nonferrous Extractive Research" *(1990 Review of Extractive Metallurgy)*, R. Winand, April, pp. 24–30.

Intermetallics

"Brushing Up on the History of Intermetallics in Dentistry" *(Featured Overview)*, R.M. Waterstrat, March, pp. 8–14.
"The Combustion Synthesis of Ni-Ti Shape Memory Alloys" *(Research Summary)*, H.C. Yi and J.J. Moore, August, pp. 31–35.
"The Microstructure and Properties of Rapidly Solidified, Dispersion-Strengthened NiAl" *(Forum Feature)*, S.C. Jha and R. Ray, October, pp. 58–61.
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"The Journal Talks with TMS President Robert W. Bartlett," February, pp. 60–61.

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"Considering the Status of the Lead and Zinc Communities" *(Economics)*, J.-P. Rodier, June, pp. 36–38.
"Converting Jarosite Residues into Compact Hematite Products" *(Research Summary)*, J.E. Dutrizac, January, pp. 36–39.
"The Development and Potential Applications of a Pb-Al Alloy" *(Research Summary)*, J.F. Cole and F.E. Goodwin, June, pp. 41–43.
"Highlights from the Annual Conference of Metallurgists" *(Conference Review)*, D. Poggi, P. Hancock, M. Reist and L. St. Arnaud, June, p. 32.
"Lead Smelting in a Submerged Arc Furnace" *(Overview)*, G. Rath, T. Vlajcic and O. Metelmann, June, pp. 39–40.
"1990 Lead, Zinc and Related Metals World Symposium" *(Conference Review)*, R.D. Prengaman, June, pp. 34–35.
"The Prospects for Recycling Lead-Acid Batteries in India" *(Overview)*, K.V. Venkateswaran, J. Prabhakar Rethinaraj and S. Visvanathan, October, pp. 34–35.
"Reflecting on the New Goals in Nonferrous Extractive Research" *(1990 Review of Extractive Metallurgy)*, R. Winand, April, pp. 24–30.
See also: *"Environment" and "Recycling & Secondary Recovery."*

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"Aerospace Materials: User and Supplier Perspectives" *(Forum Roundtable)*, M.C. Munson, May, pp. 60–62.
"Al-Li Alloys and Ultrahigh-Strength Steels for U.S. Navy Aircraft" *(Featured Overview)*, E.W. Lee, C.E. Neu and J. Kozol, May, pp. 11–14.
"Aluminum Alloy 6013 Sheet for New U.S. Navy Aircraft" *(Overview)*, R.S. Kaneko, L. Bakow and E.W. Lee, May, pp. 16–18.
"The Damping Performance of Aluminum-Based Composites" *(Research Summary)*, C.A. Updike, R.B. Bhagat, M.J. Pechersky and M.F. Amateau, March, pp. 42–46.
"The Lost-Foam Casting of Aluminum Alloy Components" *(Overview)*, S. Shivkumar, L. Wang and D.

Apelian, November, pp. 38–44.
"Structural Honeycomb Materials for Advanced Aerospace Designs" *(Overview)*, J. Wittenauer and B. Norris, March, pp. 36–41.
See also: *"Intermetallics."*

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"Magnetic Thin Films for Information Storage" *(Overview)*, G.J-S Gau, February, pp. 35–38.
"Radiation Effects in Magnetic and Superconducting Materials" *(Research Summary)*, R.D. Brown and J.R. Cost, February, pp. 39–43.

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"Computer-Assisted Image Analysis in Quantitative Fractography" *(Overview)*, J.C. Russ, October, pp. 16–19.
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"Critical Property Evaluation of High-Temperature Composites: A Case Study in Materials Design" *(Overview)*, D.A. Woodford, November, pp. 50–55.
"The Microstructure and Properties of Rapidly Solidified, Dispersion-Strengthened NiAl" *(Forum Feature)*, S.C. Jha and R. Ray, October, pp. 58–61.
"The New Quantitative Fractography for Analyzing Metallic Surfaces" *(Featured Overview)*, E.E. Underwood, October, pp. 10–15.
"New Trends in Characterizing Industrial Bayer Aluminas" *(Research Summary)*, M.P. García Coque, M.A. Llavona, J.M. Ayala, L.F. Verdeja and J.P. Sancho, November, pp. 20–21.
"Quantitative Fractography and Fracture Mechanics Characterization" *(Overview)*, S.M. El-Soudani, October, pp. 20–27.
"Recent Developments in Quantitative Fractography" *(Commentary)*, B.L. Averbach, October, p. 9.
"Room-Temperature Optical Inspection Reliably Indicates Superconductivity" *(Featured Overview)*, H.A. Hoff and C.S. Pande, June, pp. 10–15.
"Understanding Process-Induced Microstructures in $RBa_2Cu_3O_7$" *(Overview)*, R.W. McCallum and M.J. Kramer, June, pp. 26–28.

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"The Development and Potential Applications of a Pb-Al Alloy" *(Research Summary)*, J.F. Cole and F.E. Goodwin, June, pp. 41–43.
"The Structural Applications of Mechanical Alloying" *(Conference Review)*, F.H. Froes, December, pp. 24–25.

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"Current Processes for the Cold-Wall Melting of Titanium" *(Overview)*, J.W. Sears, March, pp. 17–21.
"Magnesium Production by Plasma-Powered Processing" *(1990 Review of Extractive Metallurgy)*, A.M. Cameron, D.L. Canham and V.G. Aurich, April, pp. 46–48.
"The Mineralogy of Copper Electrorefining" *(Overview)*, T.T. Chen and J.E. Dutrizac, August, pp. 39–44.
"The Production of High-Purity Aluminum in Japan" *(Overview)*, M. Kondo, H. Maeda and M. Mizuguchi, November, pp. 36–37.

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